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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/700,611	02/05/2001	Hideo Sato	450101-02406	7664

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EXAMINER	
ARMSTRONG, ANGELA A	

ART UNIT	PAPER NUMBER
2654	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/700,611	SATO, HIDEO	
	Examiner	Art Unit	
	Angela A Armstrong	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-69* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

1. Claims 1-69 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims are directed to non-statutory subject matter because the recitation of the steps are purely mathematical in nature requiring manipulation of an abstract idea.

While embedding information into an audio signal may provide a resulting output signal, the claimed invention does not itself perform any useful, concrete and tangible result, since there is no recitation of receiving or obtaining an input signal (within the method claims) and no recitation of actually generating or providing a specific output signal.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-69 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-26 of U.S. Patent No. 6,359,849 (to Sato et al) in view of Senoh (US Patent No. 6,240,121).

US Patent No. 6,359,849 does not specifically claim damping and shifting the orthogonal transform coefficient such that the damping and shifting generates the additional information by performing inverse orthogonal transform to a predetermined number of orthogonal transform coefficients.

Senoh (Figure 1) discloses an apparatus and method for watermark data insertion which includes a watermark data insertion method for inserting watermark data into an input original signal according to the present invention includes: a frequency transform step for applying a frequency transform to the original signal to form an intermediate signal; a watermark data insertion step for inserting the watermark data into a first set of frequency components of the intermediate signal; and a frequency inverse transform step for applying an inverse frequency transform to the intermediate signal, the watermark data having been inserted into the intermediate signal, thereby obtaining a signal containing the watermark data embedded therein, wherein the watermark data insertion step includes: determining, based on pseudo random

numbers, the first set of frequency components of the intermediate signal into which the watermark data is inserted; and using a second set of frequency components of the intermediate signal as a reference signal, the watermark data not being inserted into the second set of frequency components, and such that the insertion position and the signal amplitude of watermark data are varied in accordance with the frequency components and amplitude of an original signal (a "predetermined number of coefficients" which thereby when transformed provide a "predetermined number of orthogonal transform coefficients") thereby making it difficult to detect the watermark data.

It would have been obvious to one of ordinary skill to scale and generate the watermark or additional embedding information as taught by Senoh, so as to provide for damping the coefficient so as to ensure the watermark or additional embedded information remains inaudible, as suggested by Senoh.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tewfik (US Patent No. 6,061,793) in view of Senoh (US Patent No. 6,240,121).

3. Regarding claim 1, Tewfik teaches an additional information embedding method for embedding additional information into an audio signal (col. 3, lines 18-22), the method comprising: an orthogonal transform step of orthogonally transforming an audio signal and thus calculating an orthogonal transform coefficient (col. 6, lines 42-57). Tewfik teaches the coefficients of additional information for embedding are scaled and added to the audio signal (col. 6, line 58 to col. 8, line 67), but does not specifically teach damping and shifting the orthogonal transform coefficient such that the damping and shifting generates the additional information by performing inverse orthogonal transform to a predetermined number of orthogonal transform coefficients.

Senoh (Figure 1) discloses an apparatus and method for watermark data insertion which includes a watermark data insertion method for inserting watermark data into an input original signal according to the present invention includes: a frequency transform step for applying a frequency transform to the original signal to form an intermediate signal; a watermark data insertion step for inserting the watermark data into a first set of frequency components of the intermediate signal; and a frequency inverse transform step for applying an inverse frequency transform to the intermediate signal, the watermark data having been inserted into the intermediate signal, thereby obtaining a signal containing the watermark data embedded therein, wherein the watermark data insertion step includes: determining, based on pseudo random numbers, the first set of frequency components of the intermediate signal into which the watermark data is inserted; and using a second set of frequency components of the intermediate signal as a reference signal, the watermark data not being inserted into the second set of frequency components, and such that the insertion position and the signal amplitude of

watermark data are varied in accordance with the frequency components and amplitude of an original signal (a "predetermined number of coefficients" which thereby when transformed provide a "predetermined number of orthogonal transform coefficients") thereby making it difficult to detect the watermark data.

It would have been obvious to one of ordinary skill to scale and generate the watermark or additional embedding information as taught by Senoh, so as to provide for damping the coefficient so as to ensure the watermark or additional embedded information remains inaudible, as suggested by Senoh.

Regarding claim 2, Tewfik teaches the orthogonal transform step includes carrying out MDCT of the audio signal so as to calculate an MDCT coefficient, and wherein the shift and addition step includes damping and shifting the calculated MDCT coefficient in the direction of the frequency axis and adding the additional information to the original MDCT coefficient so as to embed the additional information (col. 6, line 42 to col. 8, line 67).

Regarding claim 3, Tewfik teaches the shift and addition step includes adding the orthogonal transform coefficient shifted on the frequency axis to the original orthogonal transform coefficient so that a frequency masked condition and a temporal masking condition are met (col. 3, line 58 to col. 8, line 67).

Regarding claim 4, Tewfik et al teaches the shift and addition step includes carrying out the addition when the value obtained by adding the shifted orthogonal transform coefficient to the value of the original orthogonal transform coefficient is not higher than a predetermined value (col. 3, line 58 to col. 8, line 67).

Regarding claim 5, Tewfik teaches the shift and addition step includes prohibiting the shift and addition in accordance with the polarity of the value obtained by adding the shifted orthogonal transform coefficient to the value of the original orthogonal transform coefficient (col. 3, line 58 to col. 8, line 67).

Regarding claim 6, Tewfik teaches the shift and addition step includes carrying out the shift and addition when the audio signal falls within a range from an upper limit value to a lower limit value (col. 3, line 58 to col. 8, line 67).

Regarding claim 7, Tewfik teaches the shift and addition step includes carrying out the shift and addition when the audio signal falls within a range from an upper limit value to a lower limit value set on the basis of the human auditory characteristics (col. 3, line 58 to col. 8, line 67).

Regarding claim 8, Tewfik teaches the shift and addition step includes carrying out the shift and addition of the orthogonal transform coefficient within a predetermined Frequency band (col. 3, line 58 to col. 8, line 67).

Regarding claim 9, Tewfik teaches the shift and addition step includes carrying out the shift and addition of the MDCT coefficient within a predetermined frequency band (col. 3, line 58 to col. 8, line 67).

Regarding claim 10, Tewfik teaches the shift and addition step includes dividing the frequency band of the audio signal and carrying out shift and addition for each of the divided frequency bands (col. 3, line 58 to col. 8, line 67).

Regarding claim 11, Tewfik teaches the shift and addition step includes reversing the shifting direction of the divided adjacent frequency bands (col. 3, line 58 to col. 8, line 67).

Regarding claim 12, Tewfik teaches scrambling the signal calculated by the shift and addition step, using a pseudo-random signal (col. 3, line 58 to col. 8, line 67).

Regarding claim 13, Tewfik teaches the shift and addition step includes shifting the MDCT coefficient toward the frequency-increasing side and adding the MDCT coefficient to the original MDCT coefficient (col. 3, line 58 to col. 8, line 67).

Regarding claim 14, Tewfik teaches the shift and addition step, the Frequency of the MDCT coefficient is increased by (sampling frequency/number of samples of MDCT coefficient) x 2N) Hz, as the MDCT coefficient is shifted by 2N units (where N is a natural number) (col. 3, lines 40-56).

Regarding claim 15, Tewfik teaches the shift and addition step is substantially equal to the amplitude of the audio signal (col. 5, lines 53-62).

Regarding claim 16, Tewfik teaches the shift and addition step includes shifting the MDCT coefficient toward the frequency-decreasing side and adding the MDCT coefficient to the original MDCT coefficient (col. 3, line 58 to col. 8, line 67).

Regarding claim 17, Tewfik teaches the shift and addition step, the frequency of the MDCT coefficient is decreased by (sampling frequency/number of samples of MDCT coefficient) x 2N) Hz, as the MDCT coefficient is shifted by 2N limits (where N is a natural number) (col. 3, lines 40-56).

Regarding claim 18, Tewfik teaches the shift and addition step is substantially equal to the amplitude of the audio signal (col. 5, line 53 to col. 6, line 2).

Regarding claim 19, Tewfik teaches the shift and addition step includes shifting the MDCT coefficient by 2N units (where N is a natural number) (col. 3, lines 40-56).

Regarding claim 20, Tewfik teaches the shift and addition step includes shifting the MDCT coefficient by 2N-1 units (where N is a natural number) (col. 3, lines 40-56).

Regarding claim 21, Tewfik teaches the shift and addition step includes adding the shifted MDCT coefficient within a critical band of a Frequency masking area of the MDCT coefficient of the original audio signal (col. 3, line 58 to col. 8, line 67).

Regarding claim 22, Tewfik teaches the additional information is limitation information for prohibiting transfer of the audio signal (col. 9, line 61 to col. 10, line 11).

Regarding claim 23, Tewfik teaches the additional information is limitation information for prohibiting recording of the audio signal to a recording medium (col. 9, line 61 to col. 10, line 11).

Regarding claim 24, Tewfik teaches the additional information is work data corresponding to the audio signal (col. 9, line 61 to col. 10, line 11).

4. Regarding claim 50, Tewfik teaches a demodulation method for receiving an audio signal in which additional information is embedded and demodulating the additional information (col. 7, line 30 to col. 8, line 3), a receiving step of receiving an audio signal in which additional information is embedded and a demodulation step of demodulating the additional information on the basis of the polarity of the audio signal at each predetermined interval on the frequency axis, of the received signal (col. 7, line 30 to col. 8, line 3). Tewfik teaches the coefficients of additional information for embedding are scaled and added to the audio signal (col. 6, line 58 to col. 8, line 67), but does not specifically teach damping and shifting the orthogonal transform coefficient such that the damping and shifting generates the additional information by

performing inverse orthogonal transform to a predetermined number of orthogonal transform coefficients.

Senoh (Figure 1) discloses an apparatus and method for watermark data insertion which includes a watermark data insertion method for inserting watermark data into an input original signal according to the present invention includes: a frequency transform step for applying a frequency transform to the original signal to form an intermediate signal; a watermark data insertion step for inserting the watermark data into a first set of frequency components of the intermediate signal; and a frequency inverse transform step for applying an inverse frequency transform to the intermediate signal, the watermark data having been inserted into the intermediate signal, thereby obtaining a signal containing the watermark data embedded therein, wherein the watermark data insertion step includes: determining, based on pseudo random numbers, the first set of frequency components of the intermediate signal into which the watermark data is inserted; and using a second set of frequency components of the intermediate signal as a reference signal, the watermark data not being inserted into the second set of frequency components, and such that the insertion position and the signal amplitude of watermark data are varied in accordance with the frequency components and amplitude of an original signal (a "predetermined number of coefficients" which thereby when transformed provide a "predetermined number of orthogonal transform coefficients") thereby making it difficult to detect the watermark data.

It would have been obvious to one of ordinary skill to scale and generate the watermark or additional embedding information as taught by Senoh, so as to provide for damping the

coefficient so as to ensure the watermark or additional embedded information remains inaudible, as suggested by Senoh.

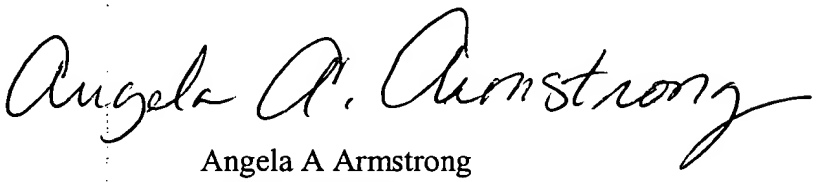
5. Regarding claims 25-49, claims 25-49 are apparatus claims similar in scope and content to the method claims of 1-24 and are therefore rejected under similar rationale.

6. Regarding claims 51-69, claims are demodulation method and apparatus claims similar in scope and content to the information embedding method claims of 1-24, and are therefore rejected under similar rationale.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela A. Armstrong whose telephone number is 571-272-7598. The examiner can normally be reached on Monday-Thursday 11:30-8:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Angela A Armstrong
Primary Examiner
Art Unit 2654

AAA
December 8, 2005